

Appl. No. 09/753,310
Amdt. dated September 23, 2005
Reply to Office Action of June 23, 2005

REMARKS/ARGUMENTS

Claims 42, 48, and 54 are amended, and claims 69-76 are newly added. Claims 42, 43, 48-50, and 54-76 are now pending. (Claims 1-41, 44-47, and 51-53 were previously canceled.) Applicants respectfully request reexamination and reconsideration of the application.

Initially, Applicants acknowledge with appreciation the Examiner's indication that claims 59-61, 67, and 68 contain allowable subject matter. As discussed below, Applicants believe that all of the claims are now in condition for allowance.

Applicants note that the amendments to claims 42 and 48 were not made for reasons of patentability but to broaden those claims. As amended, the claims require that some but not necessarily all of the spring contact elements fabricated on the sacrificial substrate (claim 42) or provided at the providing step (claim 48) be mounted to the electronic component.

Claims 42, 48, 54-58, and 62-66 were rejected under 35 USC 102(b) as anticipated by US Patent No. 4,916,002 to Carver ("Carver"). In addition, claims 43, 49, and 50 were rejected under 35 USC 103(a) as obvious in view of Carver. Applicants respectfully traverse these rejections.

Independent claim 42 requires attaching *more than one* spring contact element (i.e., "ones of the spring contact elements") to terminals of *one* electronic component (i.e., "an electronic component"). The Office Action does not specifically identify which portions of Carver correspond to the electronic component and terminals of claim 42. Rather, the Office Action points to column 6 of Carver "near the bottom." Presumably, the Office Action equates the conductive layer 52 and the nickel layer 56 with the terminals and electronic component of claim 42. (Carver col. 6, lines 40-49.) It is also possible, however, that the Office Action equates the piezoelectric transducers mentioned in Carver with the electronic component of claim 42. (Carver col. 6, lines 30-39.) Regardless, however, the rejection is unsupportable because neither the layers 52, 56 nor the piezoelectric transducers meet the requirements of claim 42.

Nickel layer 56 is expressly described in Carver as a "framework" (Carver col. 6, line 52)—not as an electronic component or the terminal of an electronic component. Likewise, conductive layer 52 is described as nothing more than a layer of gold (Carver col. 6, lines 41-42). No person of skill in the field would equate a mere layer of gold with an electronic component having terminals. Thus, neither the nickel layer 56 nor the gold layer 52 is an electronic

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component with terminals, and Carver therefore fails to teach or suggest "mounting . . . spring contact elements *to terminals of an electronic component*."

Moreover, as discussed above, claim 42 requires that more than one spring contact element be mounted to one electronic component. As described in Carver, one and only one piezoelectric transducer is formed on one and only one cantilever arm assembly. (Carver col. 6, lines 30-39.) Because the cantilever arm assemblies are separated one from another by being "snapped apart" (Carver col. 6, lines 37-39 and 58-61), it would be unworkable to form one piezoelectric transducer on more than one cantilever arm assembly. Indeed, if one piezoelectric transducer were to be formed on more than one cantilever arm assembly, the process of snapping the cantilever arm assemblies apart would destroy the piezoelectric transducer. Carver therefore does not teach or suggest mounting more than one cantilever arm assembly to one piezoelectric transducer, as would be required to meet the requirements of claim 42.

Thus, neither layers 52, 56 nor the piezoelectronic transducers of Carver meet the requires of claim 42, which requires that *more than one* spring contact structure be mounted to *one* electronic component.

Independent claim 48 likewise requires that more than one spring contact element be mounted to one electronic component. Carver therefore also fails to anticipate or render obvious claim 48.

Independent claim 54 requires that "said electronic component is made separately from said contact element and prior to said mounting of said contact element to said electronic component." The nickel layer 56, conductive layer 52, and piezoelectronic transducers of Carver are fabricated on Carver's cantilever arm assemblies. The nickel layer 56, conductive layer 52, and piezoelectronic transducers are thus not "made separately from" the cantilever arm assemblies as would be required to meet the requirements of claim 54. Nor are the nickel layer 56, conductive layer 52, or piezoelectronic transducers of Carver made "prior to" mounting the cantilever arm assemblies to the nickel layer 56, conductive layer 52, or piezoelectronic transducers as also would be required to meet the requirements of claim 54. Rather, because the nickel layer 56, conductive layer 52, and piezoelectronic transducers are fabricated on the cantilever arm assemblies, the fabrication and mounting of the nickel layer 56, conductive layer 52, and piezoelectronic transducers occur simultaneously. Carver thus fails to anticipate or render obvious claim 54.

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Claims 43, 49, 50, and 55-76 depend from one of claims 42, 48, or 54 and are therefore also patentable over Carver. Moreover, claims 43, 49, 50, and 55-76 recite additional features that are not taught or suggested by Carver.

For example, claims 43 and 49 state that the electronic component is a space transformer. Acknowledging that Carver does not disclose a space transformer, the Office Action concludes that a space transformer is obvious merely because space transformers are in the prior art. It is axiomatic, however, that a claim cannot be rejected as obvious merely because one element of the claim is in the prior art. Rather, the prior art must provide a suggestion or motivation that would lead a person of skill in the field to add the use of a space transformer to Carver. As the rejection does not identify any such suggestion or motivation, the rejection is unsupported and should be withdrawn.

As another example, new claims 69 and 72 state that the electronic component "is made separately from" the spring contact elements and "prior to" mounting the spring contact elements to the electronic component. As discussed above with respect to claim 54, Carver does not teach or suggest such requirements.

As yet another example, new claims 70, 74, and 75 state that a trench in the sacrificial substrate defines a contour of "a body portion" of the spring contacts, which is located between a base and a tip of the spring contacts. Carver's cavity 12 (Carver Figure 1A) defines tip 24 but not a body portion of a cantilever arm assembly as would be required to meet the requirements of claims 70, 74, or 75.

As still another example, new claim 71 describes "ones of the spring contact elements" as "configured to form pressure based electrical connections with another electronic component while the ones of the spring contact elements are pressed against the other electronic component," and new claims 73 and 76 include a similar description. As stated in the "Summary Of The Invention" section, Carver's cantilever arm assemblies are configured for use in a scanning tunnel microscope (STM) or an atomic force microscope (AFM). (Carver col. 3, lines 8-12.) As also stated in Carver, the cantilever arm assembly of an STM or AFM must ride "on the surface of a sample with an *extremely light tracking force*, on the order of 10^{-3} to 10^{-10} N." (Carver col. 1, lines 34-37.) A cantilever arm assembly configured to provide such an extremely light tracking force would be wholly unable to form pressure based electrical connections as required by claim 71, 73, and 76. Indeed, the light tracking force required of the cantilever arm

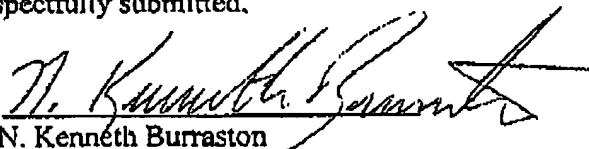
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assembly of Carver could not generate a counterforce in response to being pressed against another electronic component that is anywhere close to the counterforce needed to form a pressure based electrical connection with the other electronic component. Carver thus fails to teach or suggest claims 71, 73, or 76, and indeed, the characteristics required of a cantilever assembly used in an STM or AFM are so different from the characteristics required of contact elements for making pressure based electrical connections that Carver's teachings are wholly inapplicable to and incompatible with contact elements like those described in claims 71, 73, and 76.

In view of the foregoing, Applicants submit that all of the claims are allowable and the application is in condition for allowance. If the Examiner believes that a discussion with Applicants' attorney would be helpful, the Examiner is invited to contact the undersigned at (801) 323-5934.

Respectfully submitted,

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